

## THE WAVE CLIMATE IN THE BELGIAN COASTAL ZONE

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The characteristics of the physical coastal system are determining the sustainable development of the coastal zone. One important characteristic is the wave climate.

The sediment transport of both sandy and muddy particles is very much influenced by the wave climate. Therefore a sustainable coastal morphology has to be in equilibrium with the wave climate. The coastal morphology and the sedimentology are a basis for the ecosystem in the nearshore zone. Thus, indirectly the wave climate has important consequences for the biology in the coastal zone.

Several human activities in the coastal zone are also depending on the wave climate. Evidently, producing "green" electricity from the hydraulic energy in the sea waves can only be a success if the wave climate is available. Idem dicto for sporters that want to surf the waves. Waves can also be a nuisance for human activities such as shipping and handling goods in coastal harbours, or for contractors carrying out coastal engineering works.

To determine the wave climate in a coastal zone it is recommended to combine in situ measurements and wave modelling. In this paper the way a wave climate can be determined will be shown for the case of the Belgian coastal zone. The in situ measurements consist of long time series (~10 years) of waves and wind at different locations distributed along the Belgian coastline and in the Belgian coastal waters. The wave modelling is carried out with the state of the art, free software SWAN (Simulating Waves Nearshore). The wave model allows to generate wave climate information at any location that is "down wind" from a wave measuring station. Fig. 1 shows the model domain and the locations of the wave and wind measuring stations.

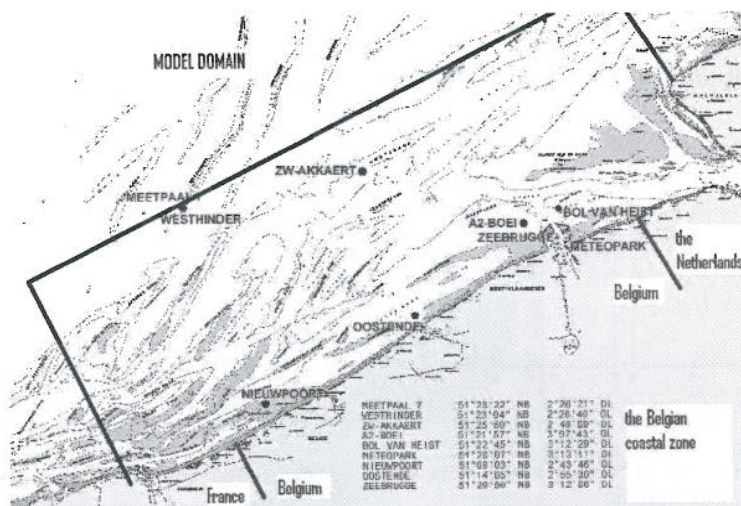


Fig. 1. Wave and wind measuring stations in the Belgian coastal zone and the wave model domain